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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,204	11/19/2001	John Pope	1529	8079
28005	7590	08/08/2005	EXAMINER	
SPRINT 6391 SPRINT PARKWAY KSOPHT0101-Z2100 OVERLAND PARK, KS 66251-2100			PATHAK, SUDHANSHU C	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/993,204	POPE, JOHN	
	Examiner	Art Unit	
	Sudhanshu C. Pathak	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on May 9th, 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-14 and 16 is/are rejected.
- 7) ☒ Claim(s) 8, 9 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on May 9th, 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-to-16 are pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7, 10-14 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilhousen et al. (5,280,472) in view of Komara et al. (6,088,570) in further view of Sourour et al. (6,560,273) in further view of Wheatley (5,577,265).

Regarding to Claims 1-4, 6, 10-11, 13-14 & 16, Gilhousen discloses a method for receiving wireless signals, the method comprising a rake receiver having a plurality of fingers, the rake receiver containing a finger for each antenna in an antenna system, the receiver receiving the signal from each antenna at the receiver and resolving the signal at the receiver (Column 11, lines 23-56 & Column 24, lines 19-68 & Column 25, lines 1-68 & Fig. 3 & Fig. 5). Gilhousen also discloses a base station comprising a distributed antenna system to provide multipath signals to facilitate transmit signal diversity for enhanced system performance (Abstract, lines 4-9 & Column 3, lines 3-10 & Column 5, lines 55-68 & Column 7, lines 52-60 & Column 9, lines 49-57 & Column 11, lines 23-37, 49-56 & Fig. 1 & Fig. 3). Gilhousen also discloses the antenna subsystem may be divided into sectors wherein each

Art Unit: 2634

antenna element has its own receiver/transmitter pair (Column 6, lines 60-68 & Column 7, lines 1-10, 60-68). Gilhousen also discloses implementing a delay element inserted in the feed structure of the antennas so as to distinguish the signals between the antennas, furthermore the delay can be naturally provided depending on the distribution of the antennas (Column 5, lines 55-68 & Column 6, lines 8-28 & Column 10, lines 55-62 & Column 12, lines 1-27 & Fig. 1 & Fig. 3). However, Gilhousen does not disclose calculating an amount of time for a signal to travel to a receiver from an antenna in an antenna system and further implementing the delay on the signal corresponding to the amount of time for the signal to travel to the receiver.

Komara discloses a method of calculating an amount of time for a signal to travel to a receiver from an antenna in an antenna system (Column 2, lines 59-67 & Column 3, lines 1-6 & Column 4, lines 62-67 & Column 5, lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Komara teaches a calibration method to determine the time for a signal to travel to a receiver from an antenna in an antenna system and this can be implemented in the spread spectrum receiver as described in Gilhousen so as to time align the receiver to each antenna in the antenna system of the base station. Furthermore, there is no criticality in the implementation of the timing loop in a TDMA or a CDMA system this is a matter of design choice wherein the time alignment is performed in both systems. However, Gilhousen in view of Komara does not disclose

implementing the delay on the signal corresponding to the amount of time for the signal to travel to the receiver.

Sourour discloses a method for receiving wireless signals, the method comprising a rake receiver operating in a multipath fading channel wherein each rake finger utilizes a select assigned delay to synchronize to a delay of channel path (Abstract, lines 1-7). The receiver further comprising a searcher periodically performs a channel search on the received signal to detect new delays of strongest paths in the channel (Abstract, lines 7-17). Sourour also discloses the rake receiver operates in conjunction with the delay searcher and a delay tracker wherein the delay searcher analyzes a received signal and finds the delays and these delays are assigned to the rake fingers and the delay tracker tracks the delays assigned by the searcher between channel searches (Column 1, lines 35-45 & Column 2, lines 5-35). The searcher looks over a wide range of delays, and the trackers look over a smaller range surrounding the assigned delays (Column 1, lines 40-45). Sourour also discloses the searcher to measure the signal strength of the multipath signals to determine the strongest paths (Column 1, lines 59-67 & Column 3, lines 64-67 & Column 4, lines 1-7). Sourour also discloses the searcher periodically performs a channel search to detect new delays of the strongest paths and re-assigns the delays to the fingers if the new delay differs from the previously assigned delay by a predetermined threshold (Column 2, lines 15-40, 50-55, 60-67 & Fig. 3 & Column 4, lines 55-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Sourour teaches implementing a delay searcher so

as to periodically determine multiple delays so as to receive the strongest (signal strength) signal and a delay tracker to track a delay in between the search times, and this can be implemented in the method for receiving signals as described in Gilhousen in view of Komara so as to implement the delay in the antenna array due to the position (location) of the array elements so as to avoid searching a wide range of delays and increase the speed of determining and demodulating the received signals. Furthermore, there is no criticality for implementing the delay to compensate for the position of the antenna in the receiver (mobile unit) or the base station since once the base station has been configured and calibrated with a specified antenna positions the delay due to the antenna positions remains constant. However, Gilhousen in view of Komara in further view of Sourour does not disclose varying the delay at the receiver on the plurality of fingers.

Wheatley discloses a system and method for mitigating the effects of fading in a digital communication system (Abstract, lines 1-2). Wheatley also discloses the actual or perceived movement of an antenna in a antenna diversity system such that the effects of the fading can be minimized (Abstract, lines 2-10). Wheatley also discloses implementing an antenna array and varying the phase of the signal received from each antenna so as to reduce the fading nulls (Column 2, lines 60-67 & Column 3, lines 1-10 & Column 5, lines 30-51, 65-67 & Column 6, lines 1-28, 57-67 & Column 7, lines 1-10). Wheatley also discloses performing this using a variable delay elements or phase shifters (Fig. 2, elements 8, 16). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention

that Wheatley teaches implementing a variable delay element (phase shifters) in each element of an antenna array and this can be implemented in the system as described in Gilhousen in view of Komara in further view of Sourour so as to provide a variable antenna pattern so as to minimize the effects of fading and the effects of fading on power control

Regarding to Claim 5, Gilhousen in view of Komara in further view of Sourour in further view of Wheatley discloses a method for receiving wireless signals comprising calculating an amount of time for a signal to travel to a receiver from an antenna in an antenna system; providing a rake receiver having a plurality of fingers, the rake receiver containing a finger for each antenna in an antenna system; receiving the signal from each antenna at the receiver; implementing a delay on the signal corresponding to the amount of time for the signal to travel to the receiver; and resolving the signal at the receiver as described above. Gilhousen further discloses the step of resolving the signal at the receiver includes a combiner summing outputs of the plurality of fingers to recover a transmitted signal (Fig. 5, element 218). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Gilhousen in view of Komara in further view of Sourour satisfies the limitations of the claim.

Regarding to Claim 7 & 12, Gilhousen in view of Komara in further view of Sourour in further view of Wheatley discloses a rake receiver for receiving multi-path signals the receiver comprising a first and second fingers further comprising a first and second delay elements configured to receive a first and second delay control

signals and a summing circuit for first and second correlated signals to produce a combined data signal as described above. Sourour further discloses the receiver circuit to include a scan control circuit configured to receive the first and second correlated signals and, responsive thereto, generate the first and second delay control signals (Fig. 2, elements 30, 32, 34). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Gilhousen in view of Komara in further view of Sourour satisfies the limitations of the claim.

Allowable Subject Matter

4. Claims 8-9 & 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing

date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure, it is recommended to the applicant to amend all the claims so as to be patentable over the cited prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (571)-272-3038. The examiner can normally be reached on M-F: 9am-6pm.

- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)-272-3056
- The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/993,204
Art Unit: 2634

Page 9

Sudhanshu C. Pathak

A handwritten signature in black ink, appearing to read "Shuwang Liu".

SHUWANG LIU
PRIMARY EXAMINER

8/5/05